PUBLIC ABSTRACT

Internal Corrosion Direct Assessment (ICDA) of Gas Transmission, Gathering, and Storage Systems

The total cost of corrosion of all pipelines through internal corrosion has been estimated to range from $50 million to $100 million per year. The proposed project seeks to develop and validate a method to assess the integrity of pipelines with respect to internal corrosion by identifying and prioritizing locations of corrosion damage. The final product will be applicable to both dry and wet gas lines, including those lines that cannot be inspected using inline inspection (ILI) tools.

A dry gas ICDA method was developed previously that compares the slope of a pipe segment in the direction of gas flow to a critical slope for water hold-up. The existence of corrosion at those locations can serve as representative worst case locations and provide information about the overall pipeline integrity with respect to internal corrosion. In the second quarter of the project, the dry gas ICDA methodology was validated against pipeline inspection data from three companies. In one case, ICDA was able to identify 90 percent of the internal corrosion indications. Another 5 percent of the sites would have been identified by ICDA if the pipe elevation profiles had been known more accurately. At these sites, the actual pipe elevation can be significantly different from that obtained from ground elevation maps because of road or stream crossings. In a second pipeline, ICDA was able to identify 78 percent of internal corrosion anomalies. The third pipeline data is being assessed further.

Gas gathering and storage systems often carry wet gas and liquid (i.e., 'free') water, so the present ICDA method developed for dry gas is not applicable. A methodology for identifying the locations of most probable corrosion is being developed. Simultaneously, corrosion models for input into a probabilistic method are being developed.

Southwest Research Institute is joined in this project by CC Technologies, Inc. Co-funding for the project is provided by Pipeline Research Council International (PRCI), Interstate Natural Gas Association of America (INGAA), and Southern California Gas.

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